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AUTHOR Rothschild, Joan
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ABSTRACT

This essay compares two recent books on computer technology in terms of their usage of gendered or gender-free language. The two books examined are "Turing's Man: Western Culture in the Computer Age" by J. David Bolter and "The Second Self: Computers and the Human Spirit" by Sherry Turkle. It is argued that the two authors' gender differences in language usage and style (with Bolter using gendered language, and Turkle using gender-free language) reveal gendered differences in approach to subject matter, questions asked, content, and cultural and philosophical assumptions. The impact of this critique for teaching is examined, with specific consideration of use of the critique for raising gender issues in the classroom. (7 end notes and 21 references) (EW)

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Joan Tothschild

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

In 1950, mathematician Alan Turing devised a test to answer the question, "Can computers think?" Although perhaps then academic, given the state of computer technology, both the question and the test--which has come to be known as the Turing Test--have reemerged as hardware has changed radically and artificial intelligence research has vastly accelerated. Two recent books, J. David Bolter's (1984) *Turing's Man: Western Culture in the Computer Age* and Sherry Turkle's (1984) *The Second Self: Computers and the Human Spirit*, which explore the human-computer relationship, describe the Turing Test in the following ways:

> Turing envisioned a game in which a human player is seated at a teletype console, by which he can communicate with a teletype in another room. Controlling this second console would be either another human or a digital computer. The player could ask any question he wished through his console in order to determine whether he was in contact with a man or a machine. (Bolter: 191)

> ...Turing proposed a contest. You enter a room and see two terminals. One is connected to a computer and the other to a person who can speak through it from another room. You may type questions, assertions, insults, anything you wish, at either terminal, and you may do so for as long as you like. Your goal is to decide which of the terminals is connected to a computer and which to a person. ...
>
> Turing suggests that if under these circumstances you cannot decide which is the computer and which is the person, you will have to conclude that the machine is intelligent. (Turkle: 264)

The two descriptions differ factually. The second quoted, Turkle's, with the person having choice of two terminals, is correct. However, they differ in another way: in their use of gendered language. While Bolter starts his account with a "human player," he switches to a male pronoun when referring to that player in the rest of the passage and to the human at the other end of the terminal. Turkle, on the other hand, adopting the device of the second person, "you," for the human player, avoids gendered language or repetition of "he or she," "her or his," etc. These patterns are characteristic of language usage throughout both books.

The two passages reveal a further difference. Bolter, using the third person, remains outside, distanced from his subject, leaving the reader distanced as well. Turkle, choosing the second person, projects a more conversational, interactive atmosphere, drawing the reader into her description. Again, the style--one distanced, the other interactive--is characteristic of both books.

These differences in language use and style are not superficial. They reflect the authors' profound difference in approach to their subject matter--the relationship of computers to human beings and to culture--that goes beyond differences that might stem from such factors as disciplines or scope and purpose of each book. The profound difference of approach lies in the awareness of gender. Even though neither author sought explicitly to deal with gender (except for Turkle's conscious use of gender-neutral language--to be discussed below), their two approaches illustrate a fundamentally different understanding of the role of gender in human interaction not only with computers but with technology generally in a cultural context. Bolter's book follows the dominant male tradition of the technology literature (see Rothschild 1983). Turkle's book is feminist.

Comparing gender differences in language usage and style in both books, I will show how they reveal gendered differences in approach to subject matter, questions asked, content, and cultural and philosophical assumptions. In the final section, I will discuss the impact of this comparative analysis for teaching and for bringing gender issues into the classroom. Because of the nature of my feminist critique, the comparison will focus more attention on Bolter's book. First, a brief summary of the books' contents and arguments.

Both authors, in exploring the meaning and dimensions of the human-computer relationship, take on the age-old, and ultimately metaphysical question of the analogy between human beings and machines. In what ways does the computer affect, change, or extend this analogy? Does the computer reinforce or suggest a new kind of human identification with machines? Does the computer bring a totally new dimension to our thinking of ourselves as machines? The authors differ as to how such questions are framed and and how they are answered.

For Bolter, a classicist by training, the computer is the "defining technology" of our age, that is, a technology that "defines or redefines man's role in relation to nature" (13). To understand this role of the computer today, he explores the computer's relationship to the defining technologies of earlier ages of Western Culture: to the spindle and potter's wheel of the ancients whose world was cyclical, finite, animistic, and organic; to the clock that came to represent the mechanistic worldview of the Scientific Revolution; and to the steam and the heat engine that ushered in a dynamic and infinite worldview and the power over nature of the industrial age. Choosing component elements of the computer--mathematics, logic, space, time, language, memory, and creation--through which to compare the computer with the defining technologies and worldviews of these prior ages, Bolter finds that, in combining elements from the past, the computer emerges as something new, and potentially dangerous. A machine that behaves like a tool, the computer has no moving parts; but it is a tool of the mind, not hand (though activated by touch). Finite and superficial like

the ancients, having its own rules in a world of its own like the mechanistic age, the computer in the electronic age calls forth "Turing's man." Instead of man as a clay vessel animated by divine breath, or man as a clock, man is cast in the image of the computer. He is an "'information processor'" and nature is "'information to be processed'" (13). Rejecting the premises and goals of artificial intelligence researchers, Bolter fears a loss of our history and our very humanity as we come to identify too closely with machines and we *all* become "Turing's men." He advocates instead a partnership between "man and computer."

Turkle, too, sees the computer as a unique entity. It is more tool than machine, but a tool that is an extension of self. For Turkle, the computer exists on the border between the inanimate and the animate, between a machine or thing and an entity with seemingly human qualities. A social psychologist whose work has focused on the cultural context and implications of psychological phenomena,[1] Turkle is concerned with the psychological, cultural, and ultimately metaphysical dimensions of the human interaction with this inert yet somehow living object. For Turkle, the computer is an "evocative object," drawing a new set of responses and thoughts about ourselves and the world that begin to constitute a computer culture. Divided into three parts, the book probes the dimensions of these interactions and contexts. In the first part, based on interviews and observations of children, Turkle describes three developmental stages of children's interactions with computers: metaphysical, mastery, and identity. Using these stages as organizing themes to examine how adult computer relationships are played out, she looks at "The New Computer Cultures" of hackers and those in artificial intelligence in Part II, and the wider implications for us generally in "Into a New Age" in Part III. For Turkle, the most important implication is that, as we begin to see ourselves as emotional machines, we exhibit a "deeply felt tension" revealing that "the question of mind in relation to machine is becoming a central cultural preoccupation" (313).

Gendered vs. Gender-Neutral Language

As a growing body of feminist scholarship has shown, the use of gender-exclusive language not only excludes the female but also reflects a worldview that is exclusively male (e.g., Kramer 1975, Vetterling-Braggin 1981, Spender 1985). In one set of instances, Bolter attempts through language to include the female. When referring to *people* in a particularized sense, he uses such phrases as "men and women," "he and she," etc., indicating that both sexes are engaged in human activities. But, when he refers to human beings in the generic or abstract sense, he uses the male indefinite noun and male pronouns almost exclusively. Thus we find throughout: *Turing's Man, mankind, layman, craftsman,* the *programmer...he.* Even when the terms *human* or *human beings* are occasionally

used, or *men and women* appears, *he* or *him* usually follows, as in the passage quoted at the beginning of this essay. This admixture is not just stylistically jarring. In causing errors and distortions, it has a contrary effect of making the gender bias in subject matter, argument, and cultural and philosophical perspectives even more glaring than if the author had not chosen selectively to "add women and stir." A few examples will illustrate.

In showing computer technology as "team technology," Bolter writes that

> It was born through collective projects at such universities as Pennsylvania, Cambridge, and Harvard, where *men and women* with varied backgrounds in science and engineering were united by the common vision of creating a logic machine (35, italics added).

While some women were involved--albeit largely hidden from history--the computer culture was and remains almost exclusively male (Levy 1984, Turkle 1984). Masculine forms are appropriate here, not gender inclusiveness. In characterizing "dynamic technology since the Middle Ages" as "a quest for power, an obsessed effort from which there was no turning back," Bolter continues,

> Western *men and women* tackled all problems, literary or technological, with the same determination to pursue the ever-receding limit of the ultimate. Even the *businessman* of the nineteenth and twentieth century, who has pursued wealth beyond all proportion, sometimes to the ruin of his health and family, is an expression of the same Faustian urge (223, italics added).

Despite the use of *men and women*, Bolter presents a male model. Even if one stretches the images of the "Faustian urge," pursuit of the "ultimate," or the "quest for power" to include women, woman as Other has largely been denied this opportunity; we can also ask whether this is indeed woman's quest. If women have not participated in the activities described, gender inclusive language is inaccurate, the attempt a meaningless exercise.

His excluding of the female from generic usage becomes, by contrast, more striking, distorting reality further. Bolter's exploration of the social and cultural meanings of the spindle and potter's wheel, the defining technologies of the ancient world, is a case in point. Although spinning and use of the spindle have been predominantly female activities in cultures throughout the world--including ancient Greece which he focuses on--Bolter never uses a female language form to refer to those who spin. It is the "the craftsman...he," whether the material worked is flax, wool, wood, or clay (180). Exploring the creative process, Bolter writes that Greek philosophers

> saw the problem of creation...with the eye of a potter examining his lump of clay: the problem was to explain how order was imposed upon an original disarray.... (181)

Plato's creator deity was "a craftsman, a metaphysical potter or carpenter...." (181)

> ...the idea of imposing patterns upon shapeless materials, influenced by the working methods of potters and carpenters, was central to both Plato's and Aristotle's thinking and therefore to the thinking of the ancient world (182).

Spinning--the work of women--does not fit this "molding" image; the spindle metaphor--so central to Bolter's original thesis of the defining technologies of the ancient world--is lost from further creation discussion (see below). That the spindle is not identified with women is also curious in that the circular and cyclical imagery that Bolter associates with both the spindle and the potter's wheel is imagery associated traditionally also with the female.

If there is no female spinner--or female weaver--neither are there any female poets, philosophers, farmers, clockmakers, programmers--even the file clerk is "he" (169). Almost all examples of people in action are male, their activities presented from a male perspective. Discussing time comparatively, Bolter writes, "The ancients measured time by their experiences. The hours a Roman elegist spends with his mistress seem but a few minutes; the minutes Horace spends with a bore are endless." (106) We are not asked to imagine what time is like to the elegist's mistress, or wife, for that matter. Accepting the idea of a universal human response to the introduction of clocks and the precise measurement of time (see p. 107), Bolter fails to include in his analysis the possibility that women's experience of time may be different from men's, cutting across cultures and historical periods.

When Bolter's generic man interacts with nature, nature is "she," following the usual convention. Blurring the distinction between generic and gender-specific use of masculine forms, Bolter adopts the view of man and nature as adversaries, with technology as the mediating factor. Thus, setting the stage for his argument in the opening chapter, Bolter can write:

> In the Middle Ages, the accomplishments of technology... fostered a new view of mankind versus the forces of nature. The discoveries of the Renaissance and the Industrial Revolution moved men closer to nature in some respects and separated them even more radically in others....Yet the desire to master nature--to harness her more efficient sources of power in steam and fossil fuels and to mine her metals for synthetic purposes--grew steadily throughout this period (9).

A central thesis of the book is that Turing's man in the computer age is even more separated and isolated from nature than Renaissance or Industrial man. In order to prevent electronic man from becoming the human prototype, Bolter calls on "humanists"--in the tradition of the Greeks and the Romantics--to rekindle a "sensitivity to nature" and "define a new relationship to nature" (228). Bolter's humanist poets and philosophers, like his "man as computer," are, generically and specifically, all men. His language reveals a failure to recognize the gender dualism implicit in the empathic-rationalist oppositions of human nature he describes, and in the pitting of "man" against nature. Yet, as early as de Beauvoir (1953), contemporary feminist scholarship had begun to demonstrate how gender dualism is embedded in Western thought (see Ortner (1974), Merchant (1980)).

Bolter's discussions of creation and creativity--whether as process, or of things, of life, or of the world--suffer from unawareness of gender dualism, the juxtaposing of generic (masculine) forms and gender-inclusive language revealing the contradictions and distortions. Illustrating that defining technologies are the metaphor for an age and thus an "attractive window" through which to view "mankind's changing views of nature," Bolter describes the technological imagery used to conceptualize creation:

> Almost every sort of philosopher, theologian, or poet has needed an analogy on the human scale to clarify *his or her* ideas. Speaking of creation as the imposition of order upon the natural world, *he or she* generally assumes a creator as well, and this creator is a craftsman or technologist (10, italics added).

Would a deBeauvoir, Schüssler Florenza, or Sappho agree? One could reasonably argue that the master craftsman imagery is less than universal.

Comparing the relationship of the creator to the thing created in different ages, using various technologies, Bolter moves from potter to clockmaker to engineer, and finally to programmer. He concludes that the programmer, although accepting the limits of the computer and its rules, "is farther removed from his materials than anyone before in the history of technology" (185). Using male examples and masculine language forms, Bolter warns that this extreme separation from his materials and from nature itself, can result in the programmer playing God. Turing's man as the grand programmer may fashion a new creation myth, making "the world not once and for all but many times over again, rearranging its elements to suit each new program of creation" (187-88). In the person of the artificial intelligence researcher, he may seek to so improve upon nature as to create "an electronic man" (201), Turing's man operating within the narrow confines of computer logic, space, and time.

At this point at which creation for Bolter becomes *procreation*--although he does not use the term, nor even suggest its application to world-creation myths--we have something more than a one-sided, male view of the creative process vis-a-vis technology. As he traces "The Technology of Making Man" (201) from the animistic Pygmalion myth to the alchemists' attempts to create an "artificial man, the homunculus" who is "found in the Jewish cabalistic tradition as the golem" (203) to the mechanical automata of the eighteenth century, Bolter introduces the section with the following sentence:

> There was perhaps never a moment in the ancient or modern history of Europe when no one was pursuing the idea of making a human being by other than the ordinary reproductive means (201).

No *one*? No *man* is more to the point. Although the prototype of the horror story about artificial procreation was written by a woman, Mary Shelley, *Frankenstein* is a critique of the *hubris* of a man who fails to take responsibility for and nurture his creation. Making humans artificially is an unlikely pursuit for woman, or women. Possessing the power give birth, women for most of human history, have been far too busy doing just that, willingly or unwillingly, and taking on the consequences, whether of pain or death, or joy. His language acting as both trap and mask, Bolter ignores that artificial procreation is exclusively a male myth and a male endeavor.[2] He is appalled that the "homunculus that results" from the artificial intelligence laboratory is "not a whole man," but a "calculating engine" without emotions (209-10). Further, he writes,

> The attempt to make man over, with whatever available technology, is an attempt to circumvent or reverse the process of nature. Man the artificer and man the artifact merge, but on the artificer's terms. In bypassing the ordinary sexual process of reproduction, man achieves a new freedom from nature; computer technology offers a path to this new freedom (209).

"..and to *power*" he might have added. That this would mean for *men* new freedom from, and power over, the one power *women* possess that men do not: the power to reproduce,[3] cannot enter the discussion. Also precluded from the "artificer" and "artifact" merging is the concept of male-female fusion in the process of procreation.[4] Loss and denial of the female role in procreation is the final level of distortion of reality to which the male language and perspective of his study have led.

Turkle's language contrasts with that of Bolter. Reading her book, one becomes aware not only that the language is gender-neutral. Neutrality has been achieved without jarring or unfelicitous phrasing, such as over-use of "his or her" or using "humankind" or the third person indefinite "one." Turkle has made a conscious effort to accomplish this (a point confirmed to me by the author). The method works. As shown in

the passage about the Turing Test quoted at the beginning of this essay, Turkle has accomplished her task by turning sentences around as needed, using the second person or plural forms where feasible, and generally being able to devise alternative phrasing that avoids awkward locutions. The result is a model for successful use of non-sexist language in a book whose major focus is not gender issues nor a feminist critique of the emerging computer culture.

Just as Bolter's use of gendered language revealed gender bias and an unawareness of gender dualism in our culture, so Turkle's use of gender-neutral language reveals not only a lack of gender bias but also a sensitivity to gender issues. For example, Part I discusses her research with children of both sexes. In the course of observations and interviews, she found distinct differences between boys and girls in both style and interplay with the computer, especially in the ways those of the middle years sought mastery, and how children identified with the computer during early teens. These differences, although not specifically sought out, emerged in the course of her inquiry into how children think about computers and interact with them. In Part II, again, without making this her central point, she notes that the computer hackers and artificial intelligence people she is discussing are almost all men. Functioning within a male-oriented culture, they reflect some of the distinctively male patterns of computer interaction she had found among children. In both instances, awareness of gender factors is revealed not only through content but also in the way that content is expressed. An author aware of gender as a factor in human thought and development cannot write "the child...he" and the "computer hacker...he" if both sexes were meant in the first case and only one sex in the second.

But using gender-appropriate language does more than erase confusion and ambiguity, enabling an author to be gender-specific when called for and gender-neutral when both sexes are meant. In revealing sensitivity to gender issues, such usage presents a more nearly objective picture of the subject described than the claimed objectivity and comprehensiveness of the model that would have "mankind" to represent the whole human race (see especially Fee 1981). When Bolter follows the latter format, he obscures the fact that his subject is "man," literally, in a Western *male* culture. The Turkle model breaks us out of that bind to be able to focus on *human*-computer interaction with a depth not possible in Bolter's framework--even though the intent of his book is far more global than hers.

Style and Method: Outside/Inside

The male cultural perspective and unawareness of gender dualism--as revealed through language usage--are reflected in a detached style and method. In Bolter's book, the reader is left outside even though the author's intent is the opposite:

to engage us with his concerns. In seeking to show where the AI mentality will lead, Bolter tries to alert his readers to the dangers of identifying so closely with machines that we become like them, losing what makes us human. But what does make us human? For Bolter it is the pursuits and qualities of the humanist in our society. The model is not just male, but the detached, intellectualized, white Western male, who objectifies reality. Bolter addresses the central concern of his book--the relationship of human beings to machines, as revealed by computers--in oppositional terms, between man and machine. In limiting his concept of *human* not only to *man* literally, but to Western humanist man, Bolter has set up a narrow two-dimensional framework for his argument. Although his humanist man encompasses Romantic attributes and sensitivity to nature missing from computer man, humanist man still exists separately from nature and from machines. Computer or Turing's man is merely humanist man shorn of his literary and philosophic sensibilities. With a truncated view of what is human, Bolter cannot deal adequately with the complexities of human-computer relationships, leaving the reader perhaps aware of dehumanizing possibilities, but unconvinced of the dangers of our becoming "Turing's men." There is more here than the alienation of the female reader who is left out of Bolter's humanity. The view of technology and culture is incomplete as well. The reader is not engaged partly because the alarm has been sounded before, and also because the picture of the way in which technologies define our culture does not square with or include much of human and cultural experience. Bolter's book, subtitled *Western Culture in the Computer Age*, attempts a broad canvas that is not realized.

This style and method contrast with that found in Turkle's book, which can be characterized as "inside" or interactive. It is an approach that engages the reader, producing a multifaceted inquiry into the human-computer relationship. Turkle and Bolter agree that the computer is, indeed, a new breed of machine. But, as Turkle emphasizes, it is a machine that "talks" to us, that responds to us visually and, increasingly, audibly. Not only is it a machine we communicate with through our minds, it is a machine about which we have feelings. Combining the methodology of observation and analysis with an interactive approach, Turkle systematically discovers and conveys a variety of dimensions and levels of human responses to the computer. Her language both reflects and reinforces this approach. When she uses the second person and avoids sexist, depersonalized abstractions to refer to human beings, she not only involves the reader; she has also found a means of expression that is consistent with and appropriate for her subject matter. A language and style that includes both sexes, and differentiates where called for, is consistent with and integral to an inquiry that probes the complexity of human-machine interactions.[5]

Turkle's approach may be called female in the sense that Bolter's is male, reflecting certain culturally-defined gender

attributes. In our present cultural and social framework, the detached and distant have been identified as male, the interactive and connective as female. Embodying these and other so-called male attributes, the male model has become the accepted tradition of intellectual inquiry,[6] a tradition that excludes or distorts the female and subordinates female attributes. Set against this is not only feminist scholarship but a feminist mode of inquiry. In this sense, Turkle's book is feminist.

Although she does not focus on sex differences nor on a feminist critique, Turkle's book is feminist because her mode of inquiry, or *method*, is feminist. Feminist method is inclusive, not exclusive. Recognizing gender as a necessary category of analysis provides tools for an enlarged, wholistic view of human beings and the universe studied. But the prism or vantage point remains experiential (Reinharz 1979, Smith 1979). In the social sciences, feminist method brings to traditional "objective" and empirical methodology an interactive approach that acknowledges and gains from involvement with the subject of study.[7] Just as interaction and connectedness are components of "good science" (Keller 1985), so are they necessary for good scholarship in the social sciences. Turkle's book is feminist not only by virtue of language and gender awareness, but also because her method enables her to generalize from a particular that does not limit, but enlarges, human experience. Although exploring a smaller universe than Bolter's, Turkle's book succeeds in both personalizing and universalizing the complexities of our evolving relationship with computers as machines.

Impact for Teaching

What can we draw from the above critique that can be useful for teaching approaches and tools to raise gender issues in the classroom? First, as Turkle's book illustrates, it is possible to use non-sexist language successfully even when an explicit feminist critique is not intended. Further, as the contrast with Bolter's book shows, it is imperative to do so; to simply "add women and stir" can result in greater distortions than making no attempt at gender inclusive language. Given its traditional male orientation, this is especially critical in the technology field. For, language usage reflects an author's level of gender awareness that is further revealed in style and method. Without gender awareness or recognizing gender as a necessary category of analysis, any social and/or philosophical critique of the role of computers in our society is necessarily distorted and incomplete. In selecting and recommending teaching materials, we need to be alert to these biases still prevalent in the technology literature, even as we seek materials free of gender bias.

Therefore, second, we should not rely exclusively on materials that focus on women and technology or specifically on gender analysis. We also should examine critically the pre-

vailing literature in the technology field, much of which remains largely untouched by the new feminist scholarship, as has been illustrated above. This literature, which continues to pour from both the scholarly and popular presses, often projects technological futures that are classist and racist, as well as sexist. I suggest two approaches. First, we should select from these works for use in the classroom, developing a gender critique as we do so, either ourselves, or through student papers and projects. Through this kind of critique, we can not only raise gender issues about technology, but also develop tools of gender analysis and how to use them among our students. Second, we need to publish feminist critiques of this literature. As feminist reviewers, we tend to concentrate on works about women, whether in feminist journals or in mainstream journals in our disciplines or fields. In our efforts to build our own scholarship, we have tended to move away from systematically critiquing the mainstream as well. But, if one goal is integrating a feminist perspective into the curriculum and our disciplines, it is necessary to build gender awareness among our colleagues. Otherwise, courses will continue to be taught either using the traditional literature and ignoring gender, or using one feminist book, say, on household technology or office automation, and leaving the rest of the course unchanged. Publishing gender critiques--in feminist journals and in the mainstream--of the literature that is now uncritically accepted and used can be a useful step toward such gender awareness.

In this manner, a critical approach to the technology literature can act as a bridge between women's studies and efforts at curriculum integration, putting into practice Catharine Stimpson's "both/and" (Stimpson 1984). It is a way of revealing to students not only the male biases of technology and our approaches to technology, but also the cultural contexts in which such biases exist and flourish. In demonstrating that technology does not develop or exist in a vacuum, such a critical approach can also lead to examining social and political implications of the technological mindset such literature reveals. We need to explore with our students and with our colleagues the consequences of a technology rooted in a two-dimensional view of human beings and of our relationship to the environment, in an alienation from nature, and in a compartmentalization of the complex phenomena that affect our technology and our lives.

NOTES

[1] See, for example, Turkle (1978).

[2] See, for example, Easlea (1983).

[3] For a description of a future society in which women voluntarily give up this power to create equality of the sexes, see Piercy (1976).

[4] See Keller (1985).

[5] Turkle's description of her method as ethnographic (see endnotes, pp. 315-23) supports my view of her method as interactive and relational.

[6] For a perceptive discussion of the effects of this intellectual tradition on women's education, see Martin (1985).

[7] See Westkott (1979), for example, on *intersubjectivity*, and Duelli Klein (1983) on *conscious subjectivity*.

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